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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/083,415	02/27/2002	Keiko Neriishi	Q68754	7378

7590 08/25/2003

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EXAMINER

GAGLIARDI, ALBERT J

ART UNIT PAPER NUMBER

2878

DATE MAILED: 08/25/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/083,415

Applicant(s)

NERIISHI ET AL.

Examiner

Albert J. Gagliardi

Art Unit

2878

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 27 February 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-24 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 February 2002 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

Art Unit: 2878

## **DETAILED ACTION**

### ***Specification***

1. The spacing of the lines of the specification is such as to make reading and entry of amendments difficult. New application papers with lines double spaced on good quality paper are required.

### ***Drawings***

2. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the “space in the range defined by a combination of a reference space and a focal depth of the lens, the reference space being defined by a length at which the stimulated emission emitting from the stimuable phosphor layer focuses on the stimulated emission receiving plane after passing through the transparent substrate and the lens” must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

### ***Claim Objections***

3. The claims are objected to because the lines are crowded too closely together, making reading and entry of amendments difficult. Substitute claims with lines one and one-half or double spaced on good quality paper are required. See 37 CFR 1.52(b).

Note: The examiner also notes that, in general, the claims are written in a form that is generally narrative in nature as opposed to the more conventional form that is typically used for

Art Unit: 2878

claims. While the examiner notes that no specific objections are being made, the applicant should carefully review such claims to insure they properly reflect applicant's invention and consider revising the claims to include more indentations to more clearly point out the individual claim steps of limitations.

***Claim Rejections - 35 USC § 112***

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 1-24 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claims 1 and 12, the claims includes a limitation of a "space in the range defined by a combination of a reference space and a focal depth of the lens, the reference space being defined by a length at which the stimulated emission emitting from the stimuable phosphor layer focuses on the stimulated emission receiving plane after passing through the transparent substrate and the lens." This limitation is unclear. Neither the "reference space" nor the "focal depth" is clearly identified in the specification or the drawings. As such the range of distance in which the light receiving plane and the light applied area of the phosphor sheet is unclear. The examiner further notes that, as best as can be determined, the claim limitations are intended to indicate that the distance between the sensor layer and the phosphor layer is maintained such that the a desired degree of focus is maintained. The examiner notes, however, the particularly desired degree of focus is also not defined by the specification and also seems to

Art Unit: 2878

be variable and therefore further rendering the claim indefinite. See MPEP 2173.05 -- Reference to an object that is variable may render a claim indefinite.

Regarding claim 24, the terms "having irregularities" and "having a surface of irregularity" are indefinite. The examiner notes that the terms are relative terms (every surface inherently has some irregularity since no surface is perfect) which render the claim indefinite. The term "irregularity" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

The remaining claims are rejected at least on the basis of their dependency.

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Art Unit: 2878

8. Claims 1, 5-9 12, and 16-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Struye *et al.* (US 6,495,850) in view of Mueller *et al.* (US 6,373,074 B1).

Regarding claim 1, Struye discloses (Figs. 1, 2) an apparatus and method for reading a radiation image from a stimuable phosphor sheet (20) comprising an transparent substrate and a stimuable phosphor layer containing a latent image to be read by an image reading means comprising a light applying unit (15) and a collecting unit (17) comprising a lens (col. 10, lines 1-2) and a light receiving plane (inherent aspect of sensor array), the method comprising the steps of applying light (15) onto the phosphor layer (20) while the phosphor sheet moves relative to the collecting unit (28); collecting emission light (17) through the substrate and the lens; and converting the light into electric signals (inherent aspect of sensors such as CCD elements) (col. 9, lines 44-46) wherein the phosphor sheet (15) moves in relation to the collecting unit such that the light applied area of the phosphor layer (15) is kept apart from the center of the light receiving plane (17) in a range. The examiner notes that it is well known and considered an obvious design choice that the distance is such that the emission light is focused to some degree on the light receiving elements (see for example Mueller at Figs. 1 and 4 showing the emitted light being focused on the light sensing elements). Regarding the particular range, the examiner notes that it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art (*See In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980)). Since the distance between elements is a well known result effective variables that affects the degree of focus, the recitation of a particular range of distance would have been an obvious design choice within the skill of a person of ordinary skill in the art depending on the need of the particular application so as to allow for optimization of the system.

Art Unit: 2878

Regarding claims 5-8, the examiner notes that such limitations do not suggest any steps applicable to the claimed reading method and therefore do not further distinguish the claimed method. The examiner further notes that rigid glass substrates with a phosphor layer produced by gas phase deposition are well known and would have been a matter of routine design choice within the skill of a person of ordinary skill in the art.

Regarding claim 9, the method suggested by *Struye* and *Mueller* suggests that the light applying unit and the collecting unit may be arranged on the same side of the substrate. Absent some degree of criticality, the particular side on which the units are arranged is viewed as a matter of routine design choice within the skill of a person of ordinary skill in the art depending on the needs of the particular application.

Regarding claim 12, the apparatus suggested by *Struye* and *Mueller* as applied above suggests a variety of functionally equivalent alternative embodiments including embodiments wherein the light collecting unit collects light not through the substrate but through the lens (see *Mueller* at Fig. 6).

Regarding claims 16-18 the examiner notes that such limitations do not suggest any steps applicable to the claimed reading method and therefore do not further distinguish the claimed method.

Regarding claim 19, the method suggested by *Struye* and *Mueller* suggests that the light applying unit and the collecting unit may be arranged on the same side of the substrate. Absent some degree of criticality, the particular side on which the units are arranged is viewed as a matter of routine design choice within the skill of a person of ordinary skill in the art depending on the needs of the particular application.

Art Unit: 2878

9. Claims 2-4, 10-11, 13-15 and 20-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Struye* and *Mueller* as applied above, and further in view of *Kano et al.* (US 5,012,107).

Regarding claims 2-3 and 13-14, the methods and apparatus suggested by *Struye* and *Mueller* as applied to claims 1 and 12 above, suggest that the stimuable phosphor sheet is supported at both side surfaces on a support means (see generally Fig. 2 of *Struye* and fig. 6 of *Mueller* indicating that the sheet must be supported on the edges so as to allow for scanning of the main body of the sheet) which is arranged in a position that the collecting unit is moved on the supporting means (see generally Fig. 2 of *Struye* and Fig. 7 of *Mueller*). The examiner further notes, however, that the scanning merely requires relative movement between the sheet and the collecting unit, and that it is well known and considered a functionally equivalent design choice to move the sheet while keeping the collecting unit fixed.

Although *Struye* and *Mueller* do not specifically disclose that the phosphor sheet has reference planes, phosphor sheets with reference planes are well known in the art (see for example *Kano* at Figs. 1-2). *Kano* discloses that the type of phosphor sheet is high in sensitivity and sharpness (abstract). Therefore, absent some degree of criticality, it would have been a matter of routine design choice within the skill of a person of ordinary skill in the art to use a phosphor sheet with reference planes, such as disclosed by *Kano*, with the methods and apparatus as suggested by *Struye* and *Mueller* so as to provide radiation images that are high in sensitivity and sharpness. The examiner further notes that supporting the phosphor layer on reference planes on the support has the added advantage of reducing wear and tear on the more delicate area of the phosphor sheet.



Art Unit: 2878

Regarding claim 4 and 15, the examiner notes that such limitations does not suggest any steps and therefore does not further distinguish the claimed method.

Regarding claims 10 and 20, although *Struye Mueller* and *Kano* as applied above do not suggest a radiation image reading apparatus wherein the support means remains fixed and allows movement of the sheet along a sheet plane, those skilled in the art appreciate that a variety of functionally equivalent means for moving the sheet relative to the reading means are well known, including means wherein the sheet is moved along fixed support means by a driving means. As such, it would have been a matter of routine design choice within the skill of a person of ordinary skill in the art to modify the arrangement such that the sheet moves along a fixed support in view of the known functionally equivalent scanning arrangements.

Regarding claim 11 and 21, *Struye Mueller* and *Kano* as applied above suggest a driving means for moving the reading means relative to the sheet and support means (*Struye* at col. 10, lines 43-47).

10. Claims 22-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Struye Mueller* and *Kano* as applied above, and further in view of *Kohda et al.* (US 6,534,779 B1).

Regarding claim 22, the phosphor sheet as suggested by *Struye, Mueller* and *Kano* as applied above suggests a phosphor sheet comprising a rigid substrate (glass for example as suggested by *Kano* at col. 5, lines 21-23) and a phosphor layer having irregularities on a surface thereof (inherent). Although *Kano* does not specifically disclose the use of guide means attached to the rigid substrate on both side surfaces thereof, *Kohda* discloses (Fig. 6) that it is known in the art to provide guide means (64) attached to the substrate for strengthening purposes and to protect the phosphor layer from physical damage (col. 7, lines 62-65). As such it would have

Art Unit: 2878

been an obvious design choice within the skill of a person of ordinary skill in the art to modify the device to further include guide means attached to the side surfaces to allow for improved protection of the phosphor layer. Regarding the guide planes having surface irregularities the same as the phosphor layer, the examiner notes that since both the guide means and the phosphor layer are attached to the same surface of the substrate (although the embodiment disclosed by *Kano* also includes an additional shielding layer (3), and scattering layer (4) those skilled in the art appreciate that such layers are not necessarily required and that it is also well known to form the phosphor layer directly on the support layer) and therefore would have a surfaces of irregularity that are generally identical (i.e., conforming to the surface of the substrate). The examiner further notes that since it is well known (see explanation regarding claim 1 above) that the distance between the phosphor layer and the sensor is a well known result effective variable that affects the degree of focus of the reading apparatus using the phosphor sheet, it would have been considered an obvious design choice within the skill of a person or ordinary skill in the art to insure that irregularities of the guide means and phosphor layer generally conform to each other so as to maintain the distance between the phosphor layer and the sensor within a predetermined range so as to insure the desired degree of focus.

Regarding claim 23, the phosphor sheet as suggested above may have a curved surface (see *Kano* at col. 5, lines 31-34).

Regarding claim 24, the phosphor sheet as suggested above may have a phosphor layer formed by gas phase deposition (see *Struye* at col. 3, lines 25-30).

Art Unit: 2878

***Conclusion***

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Albert J. Gagliardi whose telephone number is (703) 305-0417. The examiner can normally be reached on Monday thru Friday from 9 AM to 5 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David P. Porta can be reached on (703) 308-4852. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.



Albert J. Gagliardi  
Examiner  
Art Unit 2878

AJG